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E.O. 12958: N/A
TAGS: ENRG TRGY TPHY ETTC CH
SUBJECT: MAKING LIGHT: SHANGHAI SYNCHROTRON RADIATION FACILITY FULLY OPERATIONAL BY APRIL 2009

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¶1. (SBU) Summary: A National Science Foundation (NSF) delegation led by NSF Assistant Director Tony Chan visited Shanghai Synchrotron Radiation Facility (SSRF) on October 26, 2007. Approximately USD 200 million has been spent building the SSRF's light source. The Central Government, the Shanghai Municipal Government and the Chinese Academy of Sciences (CAS) have each contributed one third of the project's funding. Getting approval from the Central Government to build the light source took the SSRF 10 years and it has been under construction for the past five years. It is expected to be fully operational by April 2009. End Summary.

¶2. (SBU) National Science Foundation (NSF) Assistant Director Tony Chan visited the Shanghai Synchrotron Radiation Facility (SSRF) on October 26. He was accompanied by NSF Division Director for Material Sciences Dr. Zakya Kafafi, Program Director for Materials Science Dr. Carmen Huber, NSF Beijing Office Program Specialist Sun Bo, Econoff and ConGen Shanghai FSN ESTH Specialist.

¶3. (SBU) NSF's visit was hosted by the Shanghai Institute of Applied Physics (SINAP), a subsidiary of the Chinese Academy of Sciences (CAS). Director of SINAP and SSRF Dr. Xu Hongjie briefed the delegation on SINAP's history and the SSRF's development. Following the briefing, Deputy Director of SINAP and SSRF Dr. Zhao Zhentang led the delegation through the not-yet fully constructed SSRF site.

SINAP Brief History and Major Achievements

¶4. (SBU) SINAP was founded in 1960, originally named the Chinese

Academy of Sciences Physics and Chemistry Institute. The name was changed to Chinese Academy of Sciences Nuclear Institute in the mid 1960s, and again changed to the Shanghai Nuclear Institute in the early 1970s. Xu was quick to point out that the Shanghai Nuclear Institute had never engaged in any nuclear weapons research, but had focused on civilian applications only. The current name, SINAP, was chosen in 2003, to reflect the interdisciplinary research undertaken in the institute in addition to nuclear research. Xu cited among SINAP's achievements: the building of a 1.4 m cyclotron on which the isotope platinum 202 was synthesized in a breakthrough for China in the field of new nuclide synthesis and identification; the first mini cyclotron mass spectroscope in the world; and, Gallium 67-labeled citrate, the first radiopharmaceutical developed in Chinese pharmacopoeia.

SSRF Development and Characteristics

¶5. (SBU) According to Xu, CAS first proposed building a Synchrotron Radiation Facility in Beijing in 1993. However, the Central Government lacked sufficient funding for such a major project at that time. CAS turned to the Shanghai Municipal Government in 1995, who agreed to share part of the project's cost. It then took CAS nearly 10 years to get final approval from the Central Government to build the facility in Shanghai. Construction started at the end of 2004. The facility will be completely operational by April of 2009.

¶6. (SBU) According to Xu, who claimed to have visited all light source facilities around the world, the SSRF is one of the best light sources either existing or under construction in the world. It is also the largest user facility in China. Zhao said that the SSRF is a high performance 3rd generation

synchrotron radiation source. According to Zhao, the original renminbi investment at design was USD 150 million, which is closer to USD 200 million now because of due to inflation and renminbi appreciation. One third of the cost is covered by CAS, one third by the Shanghai Municipal Government and the rest by the Central Government. Some of the parts used in SSRF are designed and manufactured by SINAP, while others are imported from Europe, the United States, Japan and Korea.

¶7. (SBU) The SSRF is composed of a 100 MeV Electron Linear Accelerator (LINAC), a 3.5 GeV Booster, a 3.5 GeV Storage Ring, and Beam Line and Experimental Stations. When an electron beam is emitted into the German-built LINAC, it is then accelerated to 100 MeV. The Booster further accelerates the beam to 3.5 GeV while it is fired into the Storage Ring. The Storage Ring, designed and manufactured by SINAP in China, can maintain the beam at its original strength and speed for up to 10 hours. The beam can then be released into Beam Line and Experimental Stations when needed for scientific study. The circumferences of the Booster and the Storage Ring are 130 meters and 432 meters respectively. Currently there are 8 Beam Lines under construction, and SSRF plans to expand to 40 to 50 Beam Lines within 10 years.

¶8. (U) The SSRF is located opposite General Electric's new research and development facility in Shanghai's Pudong district at 239 Zhang Heng Road in the Zhangjiang Hi-Tech Park. The building housing the light source is a large and modern-looking aluminum covered building designed to look like the whorls of a mollusk shell's cross-section. More information can be found at http://ssrf.sinap.ac.cn in Chinese, or http://ssrf.sinap.ac.cn/english/ in English.

¶9. (U) This report has been coordinated with Embassy Beijing NSF office.
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